

Service Manual

Radio

RF-1150LB/LBE

(For England)

FM-AM 5-BAND
PORTABLE RADIO



■ SPECIFICATIONS

Frequency Range: FM 87.5~108 MHz
LW 145~355 kHz (2060~845m)
MW 520~1610 kHz (577~186m)
SW₁ 3.9~12 MHz (76.9~25m)
SW₂ 12~30 MHz (25~10m)

Intermediate Frequency: FM 10.7 MHz
AM (MW, LW & SW) 455 kHz
470 kHz (For England)

Sensitivity: FM 2 μ V for 50mW Output
LW 50 μ V/m for 50mW Output
MW 10 μ V/m for 50mW Output
SW₁ 2 μ V for 50mW Output
SW₂ 3 μ V for 50mW Output

Power Output: 3.5W Maximum
Power Source: AC 110~125/220~240V 50/60 Hz
AC 240V 50 Hz (For England) or

6V (Four "D" Size Flashlight Batteries)
(National UM-1 or equivalent)
8W (AC Only)
16cm(6 $\frac{1}{2}$ ") PM Dynamic Speaker
246(Wide) x 237(High) x 100(Deep) mm
(9 $\frac{1}{8}$ " x 9 $\frac{11}{32}$ " x 3 $\frac{15}{16}$ ")
2.1kg (4 lb. 10 oz.) without batteries
Speaker 8 Ω
Earphone Jack 8 Ω
FM EXT. ANT 75 Ω
DIN Jack
Phono 500k Ω
Rec Out 80k Ω

Specifications are subject to change without notice for further improvement.



National Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka, Japan

■ TO REMOVE CABINET COVER

1. Remove the seven (7) control knobs (VOLUME, BASS, TREBLE, BAND, BFO, MUTING and FM AFC/MW SENS). (To remove those controls, wind a cord around the control and pull it outward.)
2. Remove the battery compartment cover.
3. Remove the four (4) cabinet cover screws (nos. 1~4), as shown in fig. 1.
4. Raise the gyro antenna.
5. Remove both the front and the rear cabinet covers.
6. Remove the sockets for lead wiring to the front and rear cabinet covers.
7. To reassemble, reverse the above procedure.

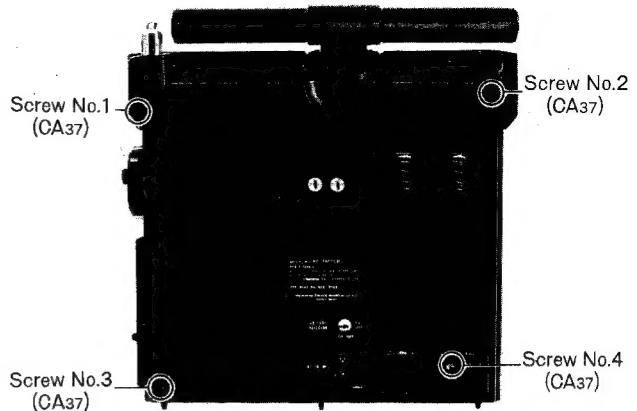


Fig. 1

■ TO REMOVE DIAL DRIVE ASSEMBLY

1. Remove the front cabinet cover. (Refer to cabinet cover removal instructions.)
2. Remove the tuning knob.
3. Remove the two (2) dial drive assembly screws (nos. 1 & 3), as shown in fig. 2.
4. Remove the indicator, as shown in fig. 2.
5. Remove the dial drive assembly nut, as shown in fig. 2.
6. Remove the muting switch bracket screws, no. 2, as shown in fig. 2.
7. Remove the dial drive assembly.
8. To reassemble, reverse the above procedure and note the following:
 1. Turn the tuning shaft to fully counter-clockwise.
 2. Turn the variable capacitor shaft to fully counter clockwise.
 3. Place the dial drive assembly into the chassis, and insert the muting switch bracket, as illustrated in fig. 2.
 4. Set the band selector switch to the SW₁ position.
 5. Insert the indicator by aligning it with the boss, as shown in fig. 2.

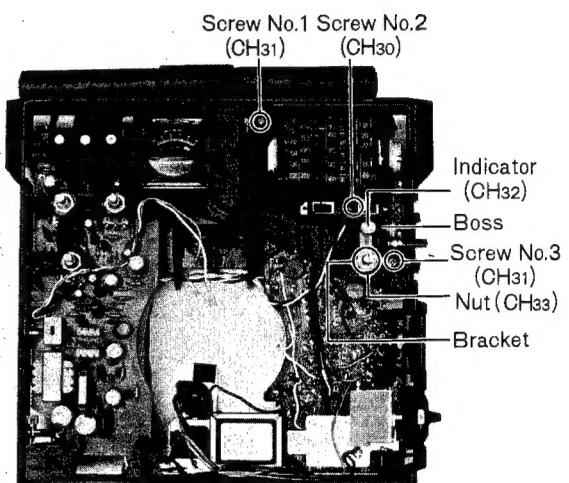


Fig. 2

■ DIAL SCALE INSTALLATION GUIDE

1. Insert the gear (the gear not attached to the shaft) and the spring into roller no. 1, as shown in fig. 3.
2. Fully wrap the dial scale around roller no. 1, as shown in fig. 3.
3. Insert the dial scale into rib of roller no. 2, as shown in fig. 3.
4. Loosen the dial drum screw, as shown in fig. 3.
5. Using a screw-driver, as shown in fig. 3, slightly move the gear of roller no. 1 so that the gear disengages from the center gear, turn three times in the direction of the arrow (being sure to secure roller no. 1 so as to prevent it from also turning), and then engage the gear with the center gear once again.
6. Set the start point of the dial scale with the rib, as shown in fig. 4.
7. Turn the tuning shaft to fully counter-clockwise.
8. Tighten the dial drum screws, as shown in fig. 3.

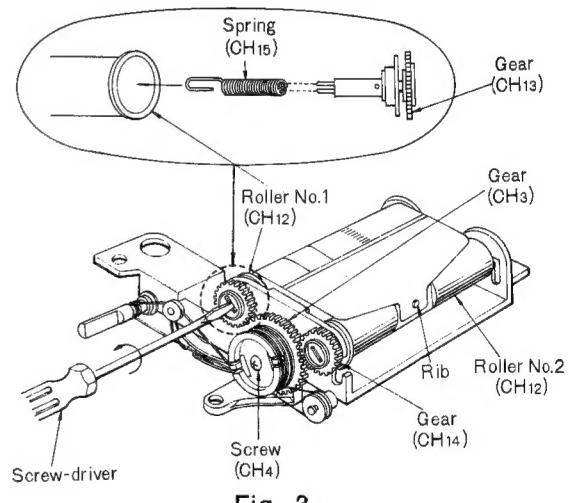


Fig. 3

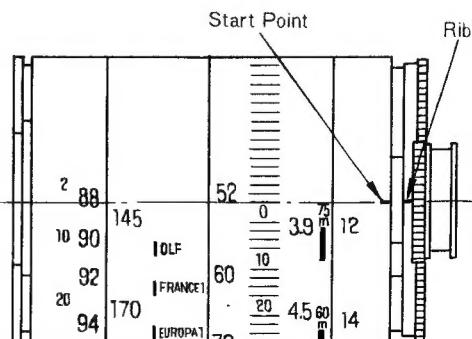


Fig. 4

■ DIAL CORD INSTALLATION GUIDE

1. Remove the dial drive assembly from the chassis. (Refer to dial drive assembly removal instructions.)
2. Dial cord length is 47 1/4".
3. Loosen the dial drum screw, as shown in fig. 3.
4. Set each dial drum at the position, as shown in fig. 5.
5. Arrows (1~12) indicate correct order and direction of dial cord installation, as shown in fig. 5.
6. Cement dial cord ends.
7. Turn the tuning shaft to fully counter-clockwise.
8. Set the start point of the dial scale with the rib, as shown in fig. 4.
9. Tighten the dial drum screw, as shown in fig. 3.

■ TO REMOVE GYRO ANTENNA

1. Remove gyro antenna cover in the direction of arrow, as shown in fig. 6.
2. Unsolder lead wires to gyro antenna, as shown in fig. 7.
3. To reassemble, reverse the above procedure.

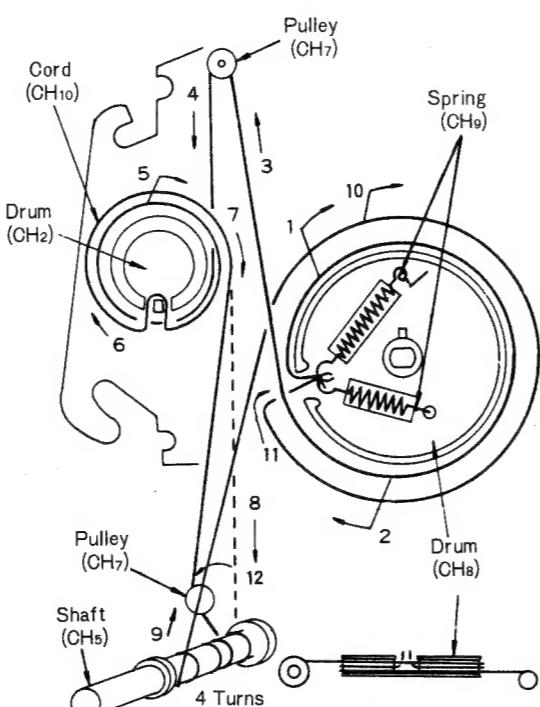


Fig. 5

■ TO REMOVE GYRO ANTENNA CASE

1. Remove gyro antenna case U ring, as shown in fig. 8.
2. Remove the gyro antenna. (Refer to gyro antenna removal instructions.)
3. Remove the gyro antenna case in the direction of arrow, as shown in fig. 8.
4. To remove gyro antenna case completely, unsolder (on the side of the PC board) lead wires to gyro antenna, as shown in fig. 7.
5. To reassemble, reverse the above procedure.

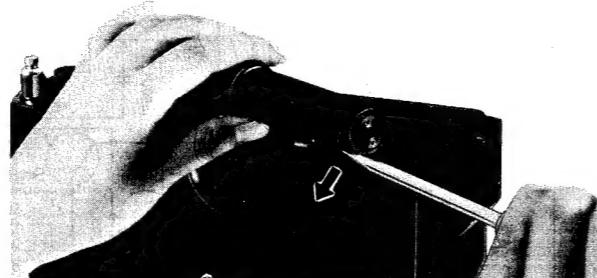


Fig. 6

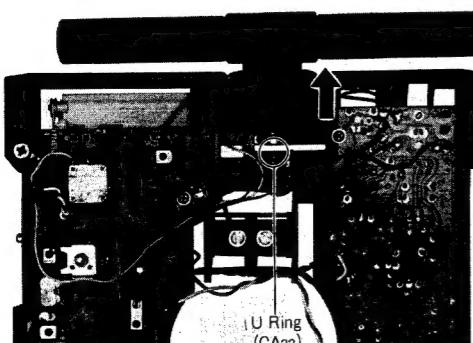


Fig. 8

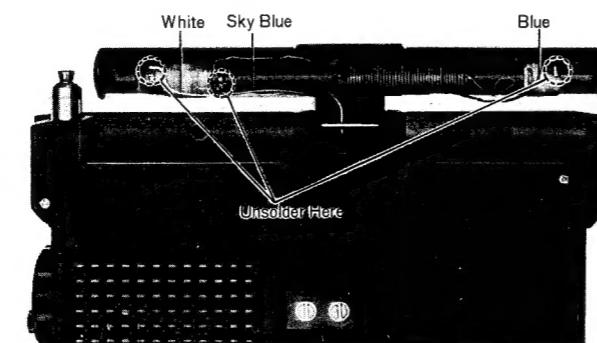


Fig. 7

■ ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

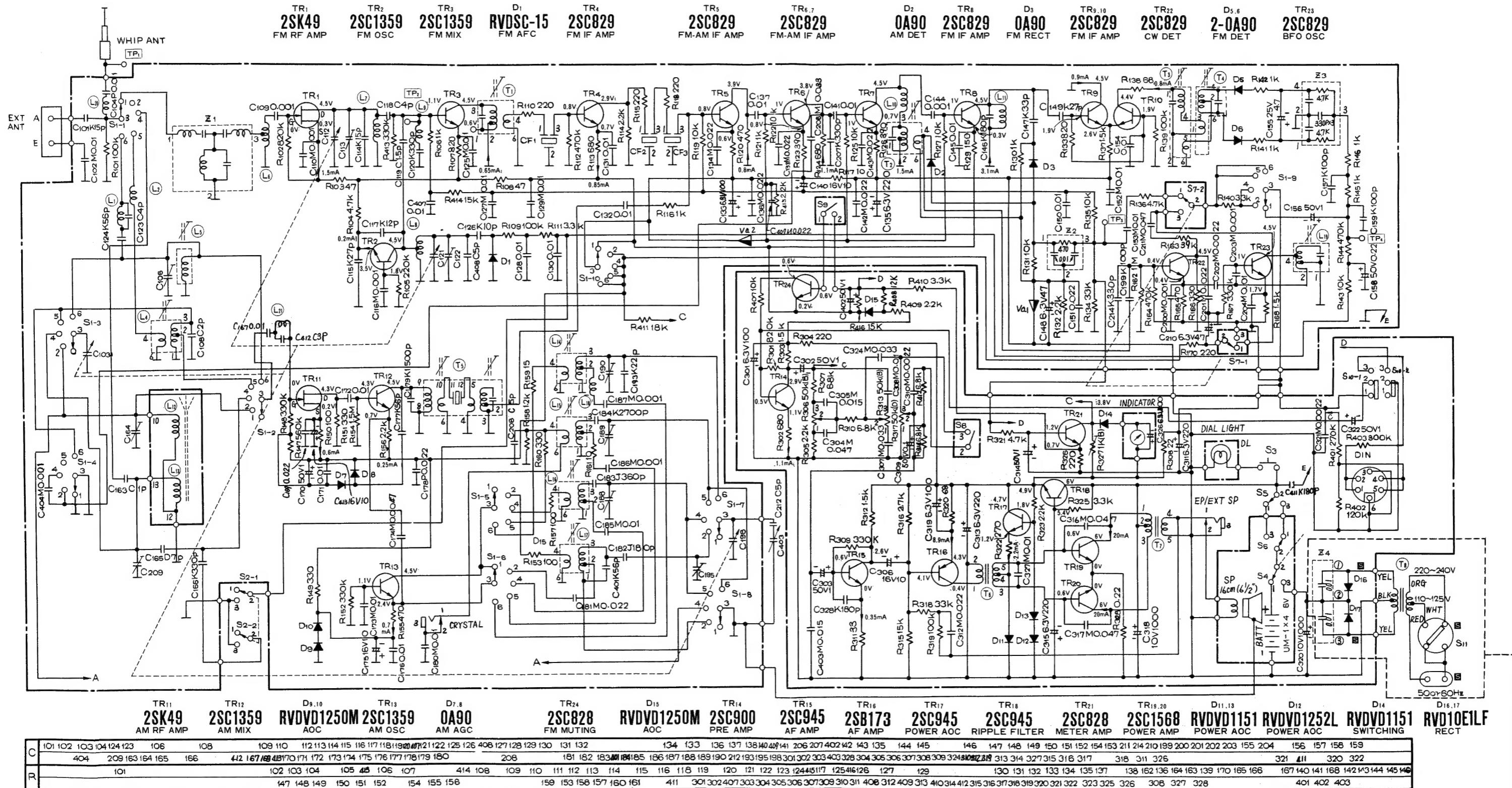
Notes:

1. Set volume control to maximum.
2. Set bass & treble controls to maximum.
3. Set band switch to MW, LW, SW₁, SW₂ or FM.
4. Set FM AFC/MW SENS switch to OFF.
5. Set loudness switch to OFF.
6. Set BFO switch to OFF.
7. Set power source voltage to 6 volts DC.
8. Set FM muting switch to OFF.
9. Set fine tuning to center.

| SIGNAL GENERATOR or SWEEP GENERATOR | | RADIO DIAL SETTING [DISTANCE] | INDICATOR (VTVM or SCOPE) | ADJUSTMENT | REMARKS |
|--|--|--|--|--|---|
| CONNECTIONS | | | | | |
| | | | | | |
| LW ALIGNMENT | | | | | |
| (1) | Fashion loop of several turns of wire and radiate signal into loop of receiver. | 455 kHz 470 kHz (England Only) 30% Mod. with 400 Hz. | Point of non-interference. (on/about 600 kHz) | Output meter across voice coil. | T ₅ (1st IFT) T ₂ (2nd IFT) |
| (2) | " | 145 kHz [Fig. 14] | " | L ₁₇ (OSC Coil) (* 1)L ₁₂ (ANT Coil) | Adjust for maximum output. Adjust L ₁₂ by moving coil bobbin along ferrite core. |
| (3) | " | 350 kHz [Fig. 15] | " | C ₁₉₅ (OSC Trimmer) C ₁₆₄ (ANT Trimmer) | Adjust for maximum output. Repeat steps (2) and (3). |
| MW ALIGNMENT | | | | | |
| (4) | " | 550 kHz [Fig. 16] | " | L ₁₆ (OSC Coil) (* 1)L ₁₃ (ANT Coil) | Adjust for maximum output. Adjust L ₁₃ by moving coil bobbin along ferrite core. |
| (5) | " | 1500 kHz [Fig. 17] | " | C ₁₈₈ (OSC Trimmer) C ₂₀₉ (ANT Trimmer) | Adjust for maximum output. Repeat steps (4) and (5). |
| (* 1) Cement antenna bobbin with wax after completing alignment. | | | | | |
| SW ₁ ALIGNMENT | | | | | |
| (6) | Connect to test point [TP ₁] through 10 PF capacitor. Common to earth. | 3.9 MHz [Fig. 18] | " | L ₁₅ (OSC Coil) L ₄ (ANT Coil) | Adjust for maximum output. |
| (7) | " | 12 MHz [Fig. 19] | " | C ₁₈₉ (OSC Trimmer) | Adjust for maximum output. Repeat steps (6) and (7). |
| SW ₂ ALIGNMENT | | | | | |
| (8) | Connect to test point [TP ₁] through 10 PF capacitor. Common to earth. | 12 MHz [Fig. 20] | " | L ₁₄ (OSC Coil) L ₅ (ANT Coil) | Adjust for maximum output. |
| (9) | " | 28 MHz [Fig. 21] | " | C ₁₉₀ (OSC Trimmer) C ₁₀₆ (ANT Trimmer) | Adjust for maximum output. Repeat steps (8) and (9). |
| FM-IF ALIGNMENT | | | | | |
| (10) | High side thru. 0.001 μ F to point [TP ₂], Common to earth. | 10.7 MHz (400 kHz SWP.) | Point of non-interference. (on/about 90 MHz). | Connect vert. amp. of scope to point [TP ₄], Common to earth. T ₁ (FM 1st IFT) T ₃ (FM 2nd IFT) (Primary) | Adjust for maximum amplitude and proper linearity between ± 100 kHz markers. (Refer to fig. 11) |
| (11) | " | " | " | T ₄ (FM 2nd IFT) (Secondary) | Adjust T ₄ so that 10.7 MHz marker appears at the center. (Refer to fig. 12) |
| FM-RF ALIGNMENT | | | | | |
| (12) | Connect to point [TP ₁] through FM dummy antenna. Common to earth. (Refer to fig. 13). | 87.2 MHz | Tuning gang fully closed. | Output meter across voice coil. | L ₈ (FM OSC Coil) (* 2) Adjust for maximum output. |
| (13) | " | 90 MHz | Tune to signal. | " | L ₇ (FM DET Coil) (* 2) Adjust for maximum output. |
| (14) | " | 106 MHz [Fig. 22] | " | C ₁₂₂ (FM OSC Trimmer) C ₁₁₃ (FM DET Trimmer) | (* 2) Adjust for maximum output. Repeat steps (12)~(14). |

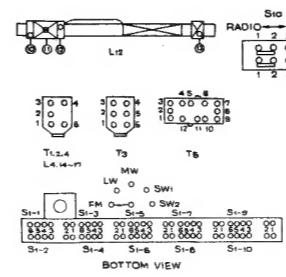
(* 2) Three output responses will be present; proper tuning is the center frequency.

Schematic Diagram – Model RF-1150LB/LBE

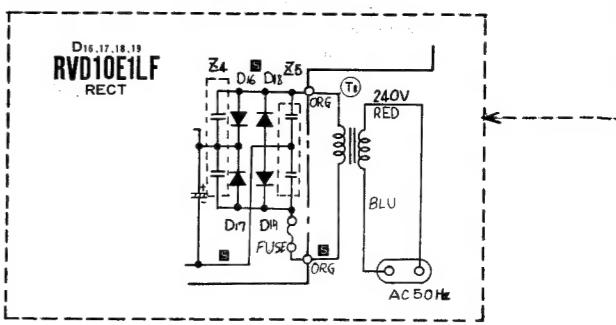


Notes:

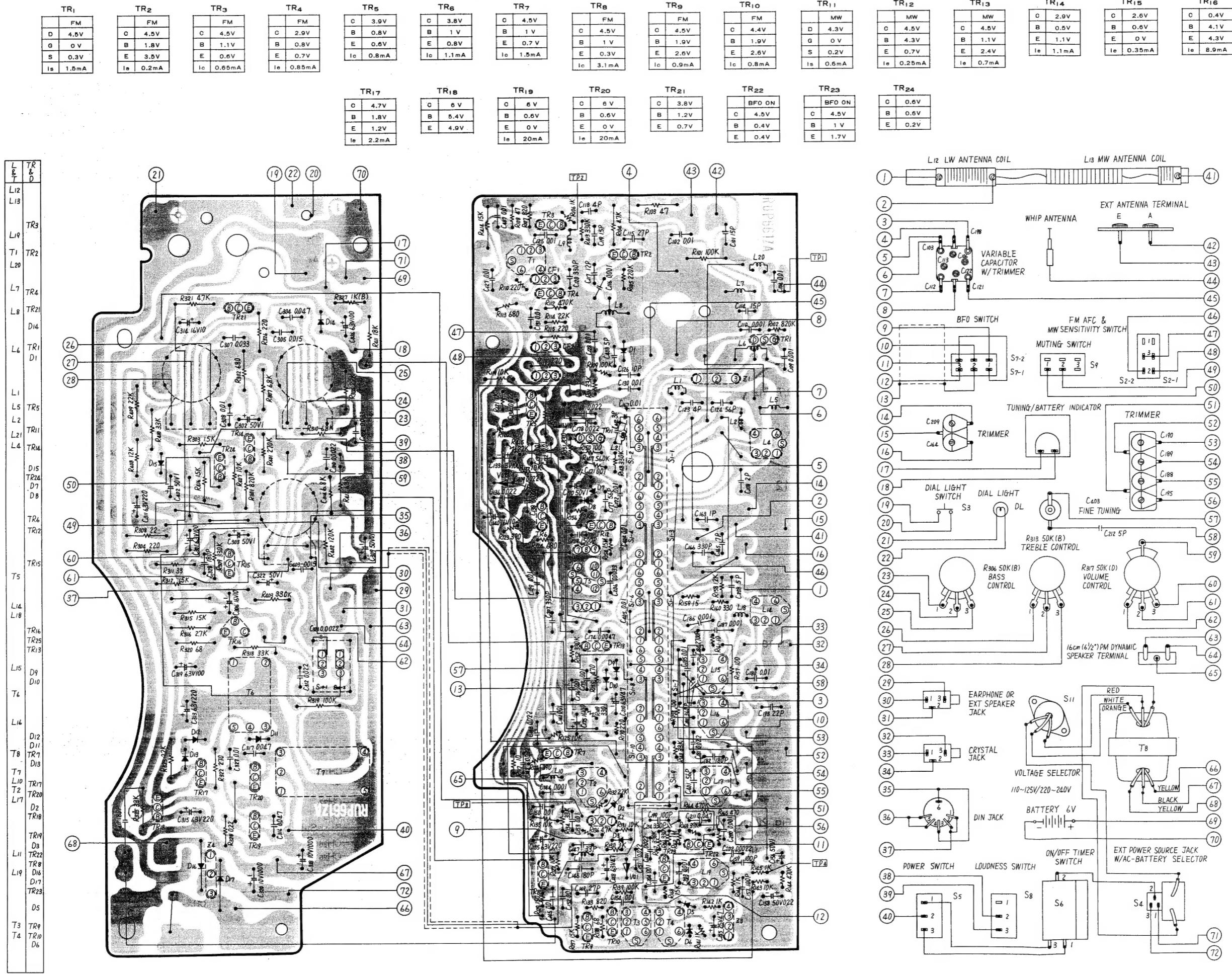
1. S₁₋₁~S₁₋₁₀: Band selector in "FM" position.
2. S₂₋₁, S₂₋₂: FM AFC/MW SENS switch in "ON" "DX" position
3. S₃: Dial light switch in "OFF" position.
4. S₄: AC-Battery selector in "Battery" position.
5. S₅: Power switch in "OFF" position.
6. S₆: Timer switch in "OFF" position.
7. S₇₋₁, S₇₋₂: BFO switch in "OFF" position.
8. S₈: Loudness switch in "OFF" position.
9. S₉: Muting switch in "OFF" position.
10. S₁₀₋₁, S₁₀₋₂: Radio-phono selector in "Radio" position.
11. S₁₁: Voltage selector in "220~240V" position.
12. DC voltage measurements are taken with circuit test 10kΩ/V from negative side of battery.
TR_{1, 2, 3, 4, 8, 9, 10} FM position
TR_{11, 12, 13} MW position
TR_{22, 23} BFO ON position
13. Battery current: No signal 45mA
Maximum output 720mA
14. **S** Indicates that only parts specified by the manufacturer be used for replacement in critical circuits.



RF-1150LBE
(For England)



Circuit Board Wiring View-Model RF-1150LB/LBE



| | | | | |
|---|-------------------------------|---|----------------------------|---|
| 1. Set band switch to MW. | | 2. Set BFO switch to ON. | | |
| SIGNAL GENERATOR or SWEEP GENERATOR | RADIO DIAL SETTING [DISTANCE] | INDICATOR (VTV or SCOPE) | ADJUSTMENT | REMARKS |
| BFO ALIGNMENT | | | | |
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 435.5 kHz | Point of non-interference. (on/about 600 kHz) | Audio output from speaker. | L19(BFO OSC Coil) Adjust for zero beat. |

5)

BATTERY/TUNING METER ADJUSTMENT

1. RADIO RECEIVER SETTING

- Set band switch to MW.
- Set volume control to minimum.
- Set power source voltage to 6 volts DC.

2. REMARKS

- Adjust R327 so that the pointer of level meter stays as shown in figure Fig. 9

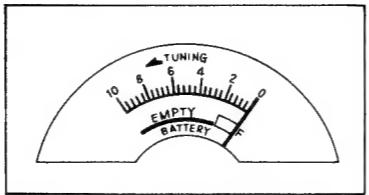
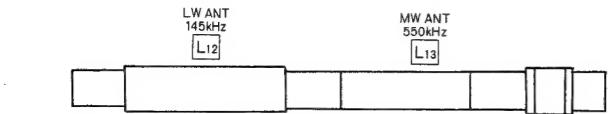


Fig. 9

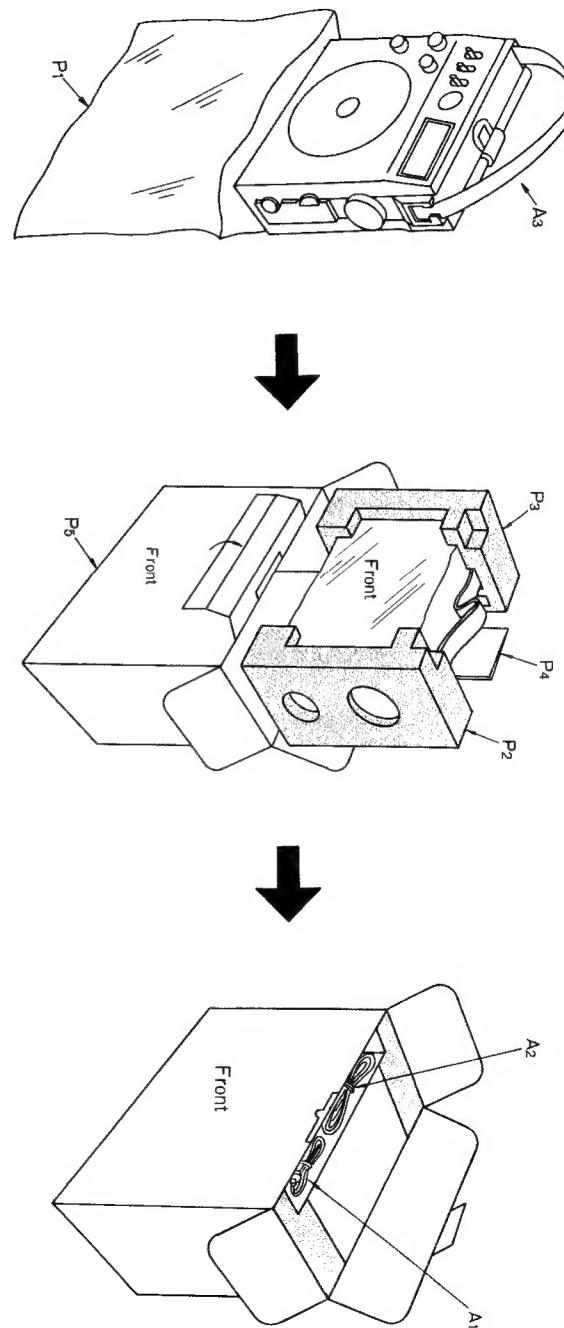


■REPLACEMENT PARTS LIST Model RF-1150LB/LBE

NOTES : 1. Part numbers are indicated on most mechanical parts.
 Please use this part number for parts orders.
 2. X-Z rank: X rank parts will cover 80% of repair needs.
 X+Y rank parts will cover 95% of repair needs.
 Z rank parts are less necessary.
 3. ~~SAFETY~~ Indicates that only parts specified by the manufacturer be used for replacement in critical circuits.

| Ref. No. | Part No. | Part Name & Description | Per Set | Remarks |
|--|--------------|--|---------|---------------------|
| TRANSISTORS AND DIODES | | | | |
| TR1,11 | 2SK49 | FM RF Amplifier, AM RF Amplifier | 2 | X |
| TR2,3,12,13 | 2SC1359 | FM Oscillator, FM Mixer, AM Mixer, AM Oscillator | 4 | X |
| TR4,5,6,7,8,9,10 22,23 | 2SC829 | FM-AM IF Amplifier, CW Detector, BFC Oscillator | 9 | X |
| TR14 | 2SC900 | Pre-Amplifier | 1 | X |
| TR15,17,18 | 2SC945 | AF Amplifier, Power Operation Compensator, Ripple Filter | 3 | X |
| TR16 | 2SB173 | AF Amplifier | 1 | X |
| TR19,20 | 2SC1568 | Power Amplifier | 2 | X |
| TR21,24 | 2SC828 | Meter Amplifier, FM Muting | 2 | X |
| D1 | RVDSC-15 | FM AFC | 1 | X |
| D2,3,7,8 | 0A90 | AM Detector, FM Rectifier, AM AGC | 4 | X |
| D5,6 | 2-0A90 | FM Detector | 1 | X |
| D9,10,15 | RVDVD1250M | Operation Compensator | 3 | X |
| D11,13,14 | RVDVD1151 | Power Operation Compensator, Switching | 3 | X |
| D12 | RVDVD1252L | Power Operation Compensator | 1 | X |
| D16,17 | RVD10E1LF | Rectifier | 2 | SAFETY X |
| D18,19 | RVD10E1LF | Rectifier(For England) | 2 | SAFETY X |
| VARIATITES | | | | |
| Va1,2 | EYV320D1R2J2 | Operation Compensator | 2 | X |
| CERAMIC FILTERS, COILS AND TRANSFORMERS | | | | |
| CF1,2,3 | RVFCF10S120R | Ceramic Filter | 3 | X |
| L1 | RLQY75S5-0 | Choke Coil | 1 | YY |
| L2 | RLQY25S5-0 | Choke Coil | 1 | Y |
| L4 | RLA3M15-K | SW1 Antenna Coil | 1 | O |
| L5 | RLA3N13-0 | SW2 Antenna Coil | 1 | X |
| L6 | RLA4Y6-0 | FM Antenna Coil | 1 | X |
| L7 | RLD4N30 | FM Detector Coil | 1 | X |
| L8 | RL04N22-0 | FM Oscillator Coil | 1 | X |
| L9,10 | RLQZ68S1-Y | Choke Coil | 2 | YY |
| L11 | RLQY15G5-0 | Choke Coil | 1 | O |
| L12,13 | RLF6X4-0 | LW & MW Antenna Coil | 1 | X |
| L14 | RL03M24-M | SW2 Oscillator Coil | 1 | O |
| L15 | RL03M22-M | SW1 Oscillator Coil | 1 | X |
| L16 | RL02M11 | MW Oscillator Coil | 1 | O |
| L17 | RL01M1 | LW Oscillator Coil | 1 | X |

Fig. 29



| Ref. No. | Part No. | Part Name & Description | Per Set | Remarks | |
|----------|------------|---|---------|---------|---------------------|
| | | | | ○ | × |
| L18,20 | RLQY15S5-0 | Choke Coil | 2 | | Y |
| L19 | RL09M2-M | BFO Oscillator Coil | 1 | ○ | X |
| L21 | RLQY75S2-0 | Choke Coil | 1 | | Y |
| T1 | RL14M301 | FM 1st IF Transformer | 1 | | X |
| T2 | RL12M402 | AM 2nd IF Transformer | 1 | | X |
| T3 | RL14M501 | FM 2nd IF Transformer, Primary | 1 | | X |
| T4 | RL14M502 | FM 2nd IF Transformer, Secondary | 1 | | X |
| T5 | RL17W112-T | AM 1st IF Transformer | 1 | ○ | X |
| T5 | RL17W113-T | AM 1st IF Transformer, (For England) | 1 | ○ | X |
| T6 | RLT3F30-V | Input Transformer, $P=700\Omega$; $S=1K\Omega$ | 1 | | X |
| T7 | RLT2H32-V | Output Transformer, $P=20\Omega$; $S=8\Omega$ | 1 | ○ | X |
| T8 | RLT5J182-W | Power Transformer | 1 | ○ | SAFETY X |
| T8 | RLT5J183-W | Power Transformer (For England) | 1 | ○ | SAFETY X |

VARIABLE RESISTORS

| | | | | | |
|----------|--------------|---|---|---|---|
| R306,313 | RVV54B36-A | 50K Ω (B), Bass & Treble Control | 2 | ○ | X |
| R317 | RVV54D45-A | 50K Ω (D), Volume Control | 1 | ○ | X |
| R327 | EVLTOAA00B13 | 1K Ω (B), Meter Control | 1 | | X |

VARIABLE CAPACITORS

| | | | | | |
|----------------------|-------------|---|---|--|---|
| C164,209 | RCV2T-16M | Trimmer | 1 | | X |
| C188,189,190, 195 | RCV4T-16M | Trimmer | 1 | | X |
| C103,112,121, 198 | PVC22K20TM | Variable Capacitor, W/Trimmer (C106,113,122) | 1 | | X |
| C403 | RCVFT1-10-2 | Variable Capacitor, Fine Tuning | 1 | | Y |

COMPONENT COMBINATIONS

| | | | | | |
|----|--------------|--|---|-------------------|---|
| Z1 | RXABPF10801H | Coils & Capacitors | 1 | | Y |
| Z2 | EXAF203Z471R | 0.01 μ F \times 2, 470 Ω | 1 | | Y |
| Z3 | EXA5DL0400 | 330PF \times 3, 4.7K Ω \times 2 | 1 | | Y |
| Z4 | EXNF2SL04C | 0.01 μ F \times 2 | 1 | SAFETY | Y |
| Z5 | EXNF2SL04C | 0.01 μ F \times 2 (For England) | 1 | SAFETY | Y |

SPEAKER

| | | | | | |
|----|------------|--|---|---|---|
| SP | EAS16P91SM | 16cm (6 $\frac{1}{2}$) PM Dynamic Speaker, Imp. 8 Ω | 1 | ○ | X |
|----|------------|--|---|---|---|

SWITCHES

| | | | | | |
|------------------|-----------|-------------------------------------|---|-------------------|---|
| S1-1~S1-10 | RSR98YK-P | Band Selector | 1 | ○ | X |
| S2-1, S2-2, S7-1 | RSS140Y-G | FM AFC/MW SENS, BFO & Muting Switch | 3 | ○ | X |
| S7-2, S9 | | | | | |
| S5 | RST65Z-F | Power Switch | 1 | | X |
| S6 | RSE50Z-T | Timer Switch | 1 | | X |
| S8 | RST65Y-F | Loudness Switch | 1 | ○ | X |
| S10-1, S10-2 | RSS61X-H | Radio-Phono Selector | 1 | SAFETY | X |
| S11 | RSR12A | Voltage Selector | 1 | SAFETY | X |

| Ref. No. | Part No. | Part Name & Description | Per Set | Remarks | |
|--------------------------------------|------------|--|---------|---------|---|
| | | | | ○ | × |
| RESISTORS | | | | | |
| R163 | ERD18VJ393 | 39K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R154 | ERD18VJ155 | 1.5M Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R161,117 | ERD18VJ100 | 10 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R159 | ERD18VJ150 | 15 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R108 | ERD18VJ470 | 47 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R138 | ERD18VJ680 | 68 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R150 | ERD18VJ101 | 100 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R129 | ERD18VJ151 | 150 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R110,115,170 | ERD18VJ221 | 220 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 3 | | Z |
| R149,151,160, 166 | ERD18VJ331 | 330 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 4 | | Z |
| R120,165 | ERD18VJ471 | 470 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R113,124 | ERD18VJ681 | 680 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R106,121,130, 141,142 | ERD18VJ102 | 1K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 5 | | Z |
| R137,168 | ERD18VJ152 | 1.5K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R114,132,156, 415 | ERD18VJ222 | 2.2K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 4 | | Z |
| R111 | ERD18VJ332 | 3.3K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R136 | ERD18VJ472 | 4.7K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R119,122,125, 127,131,135, 143 | ERD18VJ103 | 10K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 7 | | Z |
| R140 | ERD18VJ333 | 33K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R109,139 | ERD18VJ104 | 100K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R105 | ERD18VJ224 | 220K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R148,152,167, 413 | ERD18VJ334 | 330K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 4 | | Z |
| R112,144 | ERD18VJ474 | 470K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R102 | ERD18VJ824 | 820K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R147 | ERD18VJ564 | 560K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R162 | ERD18VJ105 | 1M Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R158 | ERD18VJ122 | 1.2K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R107,133 | ERD18VJ821 | 820 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R123,126 | ERD18VJ391 | 390 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R402 | ERD18SJ124 | 120K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R164 | ERD18TJ474 | 470K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R153,157 | ERD18TJ101 | 100 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R311 | ERD18SJ330 | 33 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R103 | ERD18SJ470 | 47 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R320 | ERD18SJ680 | 68 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R118,304,326 | ERD18SJ221 | 220 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 3 | | Z |
| R155 | ERD18SJ471 | 470 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R302 | ERD18SJ681 | 680 Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R116 | ERD18SJ102 | 1K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R303,312 | ERD18SJ152 | 1.5K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R305,323,409 | ERD18SJ222 | 2.2K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 3 | | Z |
| R325,410 | ERD18SJ332 | 3.3K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R104,321 | ERD18SJ472 | 4.7K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 2 | | Z |
| R307,310,314, 412 | ERD18SJ682 | 6.8K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 4 | | Z |
| R407 | ERD18SJ103 | 10K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |
| R315,414,416 | ERD18SJ153 | 15K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 3 | | Z |
| R318 | ERD18SJ333 | 33K Ω , $\frac{1}{8}$ Watt, $\pm 5\%$, Carbon | 1 | | Z |

| Ref. No. | Part No. | Part Name & Description | Per Set | Remarks | |
|----------|--------------|----------------------------------|---------|---------|---|
| | | | | | |
| R101,319 | ERD18SJ104 | 100KΩ, 1/8Watt, ±5%, Carbon | 2 | | Z |
| R309,403 | ERD18SJ334 | 330KΩ, 1/8Watt, ±5%, Carbon | 2 | | Z |
| R322 | ERD18SJ271 | 270KΩ, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R301 | ERD18SJ824 | 820KΩ, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R308 | ERD18SJ220 | 22Ω, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R401 | ERD18SJ274 | 270KΩ, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R316 | ERD18SJ272 | 2.7KΩ, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R408 | ERD18SJ123 | 12KΩ, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R411 | ERD18SJ183 | 18KΩ, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R328 | ERX12ANJR22U | 0.22Ω, 1/8Watt, ±5%, Metal Oxide | 1 | | Z |
| R134 | ERD18TJ333 | 33KΩ, 1/8Watt, ±5%, Carbon | 1 | | Z |
| R145,146 | ERD18TJ102 | 1KΩ, 1/8Watt, ±5%, Carbon | 2 | | Z |

CAPACITORS

| | | | | | |
|--|-------------|-------------------------------|----|--|---|
| C163 | ECCD1H010C | 1PF, 50WV, ±0.25PF, Ceramic | 1 | | Z |
| C108 | ECCD1H0200 | 2PF, 50WV, ±0.25PF, Ceramic | 1 | | Z |
| C118,123 | ECCD1H040C | 4PF, 50WV, ±0.25PF, Ceramic | 2 | | Z |
| C212 | ECCD1H0500C | 5PF, 50WV, ±0.25PF, Ceramic | 1 | | Z |
| C165 | ECCD1H070D0 | 7PF, 50WV, ±0.5PF, Ceramic | 1 | | Z |
| C117 | ECCD1H120KC | 12PF, 50WV, ±10%, Ceramic | 1 | | Z |
| C146,328,411 | ECCD1H181K | 180PF, 50WV, ±10%, Ceramic | 3 | | Z |
| C124,177,401 | ECCD1H560K | 56PF, 50WV, ±10%, Ceramic | 3 | | Z |
| C157,159,199 | ECCD1H101K | 100PF, 50WV, ±10%, Ceramic | 3 | | Z |
| C120,166,207, 214 | ECCD1H331K | 330PF, 50WV, ±10%, Ceramic | 4 | | Z |
| C408 | ECCD1H050CW | 5PF, 50WV, ±0.25PF, Ceramic | 1 | | Z |
| C119 | ECCD1H1R5C | 1.5PF, 50WV, ±0.25PF, Ceramic | 1 | | Z |
| C101,114 | ECCD1H150KC | 15PF, 50WV, ±10%, Ceramic | 2 | | Z |
| C115,149 | ECCD1H270KC | 27PF, 50WV, ±10%, Ceramic | 2 | | Z |
| C147 | ECCD1H330KC | 33PF, 50WV, ±10%, Ceramic | 1 | | Z |
| C126 | ECCD1H100KC | 10PF, 50WV, ±10%, Ceramic | 1 | | Z |
| C193 | ECCD1H220KW | 22PF, 50WV, ±10%, Ceramic | 1 | | Z |
| C144 | ECKD1H102PF | 0.001μF, 50WV, ±100%, Ceramic | 1 | | Z |
| C104,128,130, 131,132,137, 141,145,150, 154,167,171, 172,176,407 | ECKE1H103PF | 0.01μF, 50WV, ±100%, Ceramic | 15 | | Z |
| C110,116,186, 187,200,203 | ECKE1H102MD | 0.001μF, 50WV, ±20%, Ceramic | 6 | | Z |
| C109 | ECKE1H102PF | 0.001μF, 50WV, ±100%, Ceramic | 1 | | Z |
| C151,178 | ECKE1H223PF | 0.022μF, 50WV, ±100%, Ceramic | 2 | | Z |
| C202,310,321 | ECKE1H222MD | 0.0022μF, 50WV, ±20%, Ceramic | 3 | | Z |
| C102,125,127, 129,152,153, 173,180,185, 204,308,327, 404 | ECKE1H103MD | 0.01μF, 50WV, ±20%, Ceramic | 13 | | Z |
| C134,136,138, 142,143,169, 181,201,312, 409 | ECKE1H223MD | 0.022μF, 50WV, ±20%, Ceramic | 10 | | Z |

| Ref. No. | Part No. | Part Name & Description | Per Set | Remarks | |
|--------------------------|--------------|--------------------------------|---------|---------|---|
| | | | | | |
| C305,403 | ECKE1H153MD | 0.015μF, 50WV, ±20%, Ceramic | 2 | | Z |
| C182 | ECMS05181J-H | 180PF, 50WV, ±5%, Mica | 1 | | Z |
| C183 | ECQS1361JZ | 360PF, 125WV, ±5%, Styrol | 1 | | Z |
| C179 | ECQS1152KZ | 1500PF, 125WV, ±10%, Styrol | 1 | | Z |
| C184 | ECQS05272KZ | 2700PF, 50WV, ±10%, Styrol | 1 | | Z |
| C211,304,316, 317 | ECQG05473MZ | 0.047μF, 50WV, ±20%, Polyester | 4 | | Z |
| C307,324 | ECQG05333MZ | 0.033μF, 50WV, ±20%, Polyester | 2 | | Z |
| C158 | ECEA50ZR22 | 0.22μF, 50WV, Electrolytic | 1 | | Y |
| C309 | ECEA50ZR1 | 0.1μF, 50WV, Electrolytic | 1 | | Y |
| C148 | ECEA6V47E | 47μF, 6.3WV, Electrolytic | 1 | | Y |
| C133,301,319, 326 | ECEA6V100E | 100μF, 6.3WV, Electrolytic | 4 | | Y |
| C135,311,313, 315 | ECEA6V220E | 220μF, 6.3WV, Electrolytic | 4 | | Y |
| C210 | ECEA6V47 | 47μF, 6.3WV, Electrolytic | 1 | | Y |
| C318,320 | ECEA10V100E | 1000μF, 10WV, Electrolytic | 2 | | Y |
| C140,175,306 | ECEA16V10E | 10μF, 16WV, Electrolytic | 3 | | Y |
| C155 | ECEA25V4R7E | 4.7μF, 25WV, Electrolytic | 1 | | Y |
| C302,303,314, 322,402 | ECEA50V1E | 1μF, 50WV, Electrolytic | 5 | | Y |
| C156,170 | ECEA50V1 | 1μF, 50WV, Electrolytic | 2 | | Y |
| C412 | ECCD1H030C | 3PF, 50WV, ±0.25PF, Ceramic | 1 | | Z |
| C208 | ECCD1H050CC | 5PF, 50WV, ±0.25PF, Ceramic | 1 | | Z |
| C413 | ECEA16V10 | 10μF, 16WV, Electrolytic | 1 | | Y |
| C174 | ECKE1H472MD | 0.0047μF, 50WV, ±20%, Ceramic | 1 | | Z |
| C206 | ECKE1H332MD | 0.0033μF, 50WV, ±20%, Ceramic | 1 | | Z |

CABINET

| | | | | | |
|------|---|---|----------|---|---|
| CA1 | →RYMF1150LBX 〔Not Available, Order〕 | Cabinet Assembly Cabinet Body Only | 1 (1) | ○ | Z |
| CA2 | RGK646Y | Indicating Plate, RADIO, PHONO Mark | 1 | ○ | Z |
| CA3 | RGK658Z | Indicating Plate, Phono & Din Jack | 1 | ○ | Y |
| CA4 | →RYF1F1150LBX | Cabinet Front Cover Assembly | 1 | | |
| CA5 | Not Available, Order | Front Cover Only | (1) | | |
| CA6 | RYF1F1150LBX 〔Not Available, Order〕 | Panel, Dial | (1) | | |
| CA7 | →RYF2F1150LBX 〔Not Available, Order〕 | Indicating Plate, GX600.5BAND, etc Mark | (1) | | |
| CA8 | RYF2F1150LBX 〔Not Available, Order〕 | Net(Large), Speaker | (1) | | |
| CA9 | RJC507Z | Net(Small), Speaker | (1) | | |
| CA10 | RJT398A | Ornament, Speaker | (1) | | |
| CA11 | RJC205B | Cabinet Back Cover Assembly | 1 | ○ | Y |
| CA12 | RHG307A | Back Cover Only | (1) | | |
| CA13 | →RYEF1150M 〔Not Available, Order〕 | Spring, Battery ⊖ Side | 2 | | Y |
| CA14 | RYEF1150M | Connecting Pipe, Spring | 2 | | Z |
| | | Terminal, Battery ⊕ Side | 2 | | Y |
| | | Rubber Cushion, Gyro Antenna | 2 | | Z |
| | | Gyro Antenna Case Assembly | 1 | ○ | Y |
| | | Case Only | (1) | | |
| | | Base, Gyro Antenna Case | (1) | | |
| | | Shaft, Gyro Antenna Case | (1) | | |

| Ref. No. | Part No. | Part Name & Description | Per Set | Remarks | |
|-------------|-------------------------------------|----------------------------------|---------|---------|---|
| | | | | | |
| CA15 | RGK653Z | Indicating Plate | 1 | ○ | Z |
| CA16 | RHE25Z | Steel Ball | 1 | | Z |
| CA17 | RUS204Z | Spring, Steel Ball | 1 | | Z |
| CA18 | RUL336Z | Bracket, Steel Ball | 1 | | Z |
| CA19 | XTN3+8B | Screw, Bracket M'tg | 1 | | Z |
| CA20 | RUL389Z | Bracket, Gyro Antenna Case | 1 | | Z |
| CA21 | RDX310Z | Shaft, Gyro Antenna Case | 1 | ○ | Z |
| CA22 | XWA5B | Washer, Gyro Antenna Case | 1 | | Z |
| CA23 | XWE5D | Washer, Gyro Antenna Case | 1 | | Z |
| CA24 | XWS8AW | Washer, Gyro Antenna Case | 1 | | Z |
| CA25 | XNS8 | Nut, Gyro Antenna Case | 1 | | Z |
| CA26 | XUE5FP | U Ring, Gyro Antenna Case | 1 | | Z |
| CA27 | RYTF1150M [Not Available, Order] | Timer Knob Assembly | 1 | ○ | Y |
| | RYTF1150M | Spring, Knob | (1) | | |
| CA28 | XEART196FBY | Whip Antenna, 6 Steps 1044mm | 1 | | X |
| | RMA136Z | Bracket, Whip Antenna | 1 | ○ | Z |
| CA29 | RKK102Z | Cover, Battery Compartment | 1 | ○ | X |
| CA30 | RKE140Z | Cover, Gyro Antenna | 1 | | Y |
| CA31 | RBC105Z | Button, Dial Light Switch | 1 | ○ | Z |
| CA32 | RBD49Y | Knob, AFC, BFO & Muting Switch | 3 | ○ | X |
| CA33 | RBN314Z | Knob, Tuning | 1 | ○ | X |
| CA34 | RBN315Z | Knob, Bass & Treble | 2 | ○ | X |
| CA35 | RBS92ZK | Knob, Band Selector | 1 | ○ | X |
| CA36 | RBS98Z | Knob, Volume | 1 | ○ | X |
| | XWVR10 | Washer, Whip, Antenna | 1 | | Z |
| | RHR750Z | Insulating Plate, Whip Antenna | 1 | | Z |
| CA37(Fig.1) | XTB3+50BFN | Screw, Cabinet Cover M'tg | 4 | | Y |
| | RGT478Y | Name Plate(Small), (For England) | 1 | ○ | Z |
| | RGT478Z | Name Plate(For Italy) | 1 | ○ | Z |
| | RGT479Z | Name Plate(Large), (For England) | 1 | ○ | Z |

CHASSIS

| | | | | | |
|-------------|--|----------------------------------|----------|---|---|
| CH1 | RYDF1150LBX [Not Available, Order] RYDF1150LBX | Dial Scale Assembly Base Only | 1 (1) | ○ | Y |
| CH2(Fig.5) | RDD200Z | Drum(Small), Dial | 1 | ○ | Y |
| CH3(Fig.3) | RDG5639Z | Gear, Dial Drum(RDD200Z) | 1 | ○ | Y |
| CH4(Fig.3) | XTW3+10E | Screw, Dial Drum M'tg | 1 | | Z |
| | XWC3B | Washer, Dial Drum M'tg | 1 | ○ | Z |
| CH5 | RDT1251Z | Shaft, Tuning | 1 | ○ | Z |
| | XNGR6 | Nut, Tuning Shaft M'tg | 1 | | Z |
| | XWE6D10 | Washer, Tuning Shaft M'tg | 1 | | Z |
| | XWA6B | Washer, Tuning Shaft M'tg | 1 | | Z |
| | XUC4FW | E Ring, Gear(RDG5639Z) M'tg | 1 | | Z |
| CH6 | RDY31A | Shaft, Pulley | 2 | | Z |
| CH7 | RDR20-3 | Pulley, Dial | 2 | | Z |
| CH8(Fig.5) | RDD410Y | Drum(Large), Dial | 1 | ○ | Y |
| CH9(Fig.5) | RDS4060A | Spring, Drum | 2 | | Y |
| CH10(Fig.5) | RDZ05A | Cord(500m), Dial | 1 Roll | ○ | Y |
| CH11 | RKD356W | Scale, Dial | 1 | ○ | Y |
| CH12(Fig.3) | RDF971Z | Roller, Dial Scale | 2 | | Z |

| Ref. No. | Part No. | Part Name & Description | Per Set | Remarks | |
|-------------|--|--|----------|---------|----------|
| | | | | | |
| CH13(Fig.3) | RDG5638Y | Gear, Dial Scale Shaft (Low Frequency Side) | 1 | ○ | Z |
| CH14(Fig.3) | RDG5638Z | Gear, Dial Scale, Shaft (High Frequency Side) | 1 | ○ | Z |
| CH15(Fig.3) | RDS5201Z →RXEF1150N [Not Available, Order] | Spring Gear(RDG5638Z) Gyro Antenna Stopper Assembly | 1 (1) | ○ | Y Z |
| CH16 | RJS75Z-H | Stopper Only | (1) | | |
| CH17 | XAMR96T150B | Bracket, Stopper | (1) | | |
| CH18 | RSM2605B-K | Din Jack, Phono & Tape | 1 | | X |
| CH19 | RJF1044Y | Pilot Lamp, Dial Light, 6V, 0.1A | 1 | ○ | X |
| CH20 | RJJ30Z-H | Meter, Tuning & Battery Indicator | 1 | | X |
| CH21 | RJJ87Y-C | Terminal, EXT. Antenna | 1 | ○ | Y |
| CH22 | RJE10Z | Jack, EXT. Power Source | 1 | | Safety Y |
| CH23 | RUV409Z | Jack, Crystal & Earphone | 1 | | X |
| CH24 | RUV98A | Spring, Dial Light Switch | 1 | | Z |
| CH25 | RMW19Z | Cover, EXT. Power Source Jack | 1 | | Safety Z |
| CH26 | RBT75Z | Cover, Power & Loudness Switch | 1 | | Z |
| CH27 | RHG990Z | Cover, Voltage Selector | 1 | | Z |
| CH28 | RHR132Z | Bracket, Muting Switch | 1 | | Z |
| CH29 | RHR133Z | Knob, Fine Tuning | 1 | | Z |
| CH30(Fig.2) | XSN2+4 XSN2+5 | Rubber Cushion, Timer | 2 | ○ | Z |
| | XSN26+6 | Holder(Small), Antenna Lead Wires | 1 | | Z |
| CH31(Fig.2) | XTN3+10B | Holder(Large), Antenna Lead Wires | 1 | | Z |
| CH32 | RGX651Z | Screw, Muting Switch M'tg | 2 | | Z |
| CH33(Fig.2) | XNS8 | Screw, AFC, Muting & BFO Switch M'tg | 3 | | Z |
| CH34 | RMK91ZS | Screw, Variable Capacitor M'tg | 2 | | Z |
| | RJR18B | Screw, Dial Scale Assembly M'tg | 3 | | Z |
| CH35 | RUV217A | Indicator, Band Selector | 1 | | Z |
| | RMY75Z | Nut, Bracket M'tg | 1 | | Z |
| | XBA2C08TR0 | Bracket, Din Jack | 1 | ○ | Z |
| | RJF7A | Lead Holder(1 Terminal), P.C. Board | 1 | | Z |
| | RUV217A | Cover, Radio-Phono Selector | 1 | | Z |
| | RYF7A | Heat Sink, Transistor | 1 | | Safety Y |
| CH36 | RJT514Z | Fuse, (For England) | 1 | | Safety Y |
| | RJT514Z | Holder, Fuse, (For England) | 2 | | Z |
| | RUV364Z | Terminal, Whip Antenna | 1 | ○ | Z |
| | RHR797Z | Cover, AFC Switch | 1 | ○ | Z |
| | | Cushion, Core Antenna | 2 | ○ | Z |

ACCESSORIES

| | | | | | |
|----|----------|-------------------------------------|---|---|----------|
| A1 | XEH1A1 | Magnetic Earphone | 1 | | Y |
| A2 | RJA20Z-K | AC Cord, Power Source | 1 | | Safety Y |
| A2 | RJA43Z-K | AC Cord, Power Source (For England) | 1 | | Y |
| A3 | ROC9011Z | Belt | 1 | ○ | Z |

PACKING MATERIALS

| | | | | | |
|----|--|------------------------------------|--------|---|--------|
| P1 | RPP168Z →RPN9176Z [Not Available, Order] | Polyethylene Cover Pad Complete | 1 1 | ○ | Z Z |
| P2 | | Pad, Right Side | (1) | | |
| P3 | | Pad, Left Side | (1) | ○ | Y |
| P4 | RQX5894Z | Instruction Book | 1 | ○ | Z |
| P5 | RPG1507Z | Packing Case | 1 | ○ | Z |